In the male of *A. meridianus*, Racovitza, from Tunbridge Wells, both first maxillæ have five setæ on the apex of the inner lobe, the first thoracic leg has the propod distinctly oval, with the inferior margin straight and without any sign of a triangular projection to meet the end of the tip of the finger; the fourth thoracic leg has on the carpus a distinct row of about ten long spinules; the first and second pleopods are in close agreement with the characters assigned to this species, the outer margin of the exopod of pleopod 1 being without any trace of an emargination. In the female from Tunbridge Wells the inner lobe of maxilla 1 bears the five plumose setæ both on the right and on the left sides; the exopod of pleopod 2 is trapezoidal in shape as described by Racovitza.

Racovitza has examined specimens of *A. meridianus* from Dulwich and from Slapton Lea (Devonshire), and from numerous localities in France. He finds it very constant in its characters; it is, he says, not the only one of the series, other allied forms being found in the Mediterranean basin both in surface-streams and in underground waters. Of the underground forms, two—*A. cavaticus*, Schiodte, and *A. foreli*, Bl.—have already been described, and other forms will be described by M. Racovitza in a forthcoming memoir.

XXIX.—*On a new Tentaculate Cestode.*

By Frank E. Beddard, D.Sc., M.A., F.R.S., F.Z.S.

The occurrence of tentacles (I do not include the "proboscides" of the Tetrarhyncha) is so rare among Cestodes that a new example of this occurrence, characterising perhaps a new species or genus, is worth bringing to the notice of zoologists. So far we are only acquainted with one strictly comparable instance, shown in the genus *Schistometra*, of which I shall have something to say later. The only remaining tentaculate worms of this group are the little-known *Paratænia* and *Polypocephalus*, which are regarded by Braun* as possibly identical, but of whose systematic position the ascertained facts of structure do not permit us to form a definite opinion; nor does the recent redescription of *Paratænia* by Southwell† definitely settle the matter.

* In Bronn's 'Klassen und Ordnungen des Thiereichs,' Bd. vi.

† 'Ceylon Marine Biological Reports,' pt. vi., Jan. 1912, No. 22.

In any case the tentacles of this worm are numerous and form a circle towards the apex of the scolex above the four suckers.

In the worm which I here describe the tentacles are closely associated with the suckers and appear to protrude from them, one from each. As a matter of fact, I only saw in the living worm two tentacles, each belonging to a separate sucker; it is thus only an inference that each sucker has its tentacle, as is the case with *Schistometra togata*, though here there are two to each sucker. The tentacles are very mobile and at times totally disappear with lightning rapidity. The worm itself was obtained from the Guinea-fowl, *Numida mitrata*, and I found only one example in company with some smaller worms apparently belonging to the genus *Davainea*.

It is a small and slender worm of rather more than an inch in length and 1 mm. in breadth at the widest point, which is near the posterior end of the body. I could see no traces of hooks nor a rostellum. During life the suckers were much extended and mobile, as was also that part of the scolex in which they are implanted. After preservation the scolex was of the same diameter as the ensuing strobila. The scolex was rather injured by the pressure of the cover-glass in examination of the living worm. But I recognised at the anterior end a single large sucker-like ring, which seems to me to be not one of the four usual suckers—for there was no trace of the others,—but the mouth of an involution containing the anterior end of the worm, suckers and all. That there is nothing impossible in this view is obvious from the state of affairs in many larval Cestodes, as well as from the partial power of retracting the scolex in some adult forms. But the material in my hands does not allow of a positive statement. The slide remains for the examination of others. It would appear that the character of the tentacles and their position in relation to the suckers in this new form are quite like those exhibited by a worm recently described by Fuhrmann * as *Chapmania tapica* (= *Idiogenes tapica* of Clerc)†. That worm, however, possesses a rostellum with hooks, and has internal characters which forbid its identification with that described here. Moreover, Skriabin ‡ has lately asserted that the scolex (and

* Swedish Zool. Exp. Egypt, pt. iii. 1909, Cestodes, p. 19.
† Centralbl. f. Bakt. u. Paras. xlii. p. 722.
‡ *Ibid.* lxxiii. 1914, p. 399.

the scolex only) of Fuhrmann's example of *Chapmania tapica* is that of another genus altogether, viz., *Schistometra togata* of Cholodkovsky *.

There is also no doubt that the tentaculate Cestode described here has nothing to do with *Schistometra togata*, nor with my own † *Otiditænia eupodotidis*, which Skriabin regards as not only congeneric, but as being of specific identity, with *Schistometra togata* ‡.

For in *Schistometra*, according to Skriabin (Cholodkovsky examined examples without a scolex), the rostellum is armed and each sucker has two tentacles arising side by side from the upper end. There is also no doubt that the tentaculate worm found by myself in *Numida mitrata* has no relation to *Schistometra* in its general anatomy. This is entirely upon the plan of that of *Rhabdometra*, and I have compared the worm detail for detail with my preparations of *Rhabdometra cylindrica* §. It is to be noted, however, that the example of the tentaculate Cestode which I have in my possession is not perfectly mature, in that it is not in the process of shedding proglottids. It possesses the terminal segment, longer and more oval in form than those which precede it, as is usual among those Tapeworms in which the terminal proglottid has been observed. At the very extremity of this

* In a Russian work, being a Catalogue of Cestodes in the Cabinet of the Imperial Military-Medical Academy of Petrograd, 1912, p. 46.

† Proc. Zool. Soc. 1912, p. 194, and *ib.* 1914, p. 879.

‡ As to this identification I make the following observations:—I believe that Dr. Skriabin is quite right in identifying the genera *Schistometra* and *Otiditænia*. As he uses Cholodkovsky's name instead of mine, I presume that that name has the priority of date of publication, though both descriptions appeared in 1912—mine in March of that year; the month of issue is not given in my copy (due to the author's kindness) of Cholodkovsky's catalogue. I am not, however, convinced that the species are identical. It is to be noted that Cholodkovsky (Annuaire Mus. Zool. Ac. Sci. St. Petersburg, xx. 1915, p. 164) convinced Skriabin that the species described by the latter in his paper referred to here was not identical with *Schistometra togata*, but identical with a species described in MS. by Doppelmayr as *S. embiensis*. It does not remain clear as to which of these two the scolex alleged to be of *Chapmania tapica* really belongs. But, apart from the possible lack of knowledge of the scolex of *S. togata*, the arrangement of the testes of the latter in many rows does not agree with my observations upon those of "*Otiditænia eupodotidis*." As to *S. embiensis* it seems to me to differ from my species by the much more slender scolex, that of my species being more massive. But the testes agree as being in one row. The brick-red colour of the posterior segments of my worm as well as its different host are minor points of difference from the two species of *Schistometra* described by the three Russian authors.

§ P. Z. S. 1914, p. 859.

opens the water vascular system by a pore. I mention this for the reason that the characteristics about to be referred to may not be those of the fully mature species. The cortex and muscular system are so like those of *Rhabdometra cylindrica* that no description is necessary; and this applies to the water vascular system. On the other hand, I have detected certain minutiæ in which the generative system differs, and I give the facts for what they may be worth as marks of differentiation. The testes are posterior in position and are developed dorsally, laterally, and ventrally, as in *Rh. cylindrica*. The cirrus-sac seems to be rather longer than in the last-named species; it extends well over the ventral vessel of the water vascular system—in *Rh. cylindrica* the cirrus-sac only reaches as far as, or just over, the same water vessel. The receptaculum seminis of the new species is more elongated in form than is that organ in *R. cylindrica*.

Both the uterus and the paruterine organ of my new tentaculate species correspond very closely in relative size and shape to the same organs in the less fully mature proglottids of *Rh. cylindrica* *. This is also the case with the terminal segment of the worm. I find, however, that the end of the paruterine organ in the new species, where it comes into contact with the uterus, has no heap of calcareous bodies such as are present in the species with which I am comparing it; this seems to be a real difference, though the heaps of calcareous bodies are at least not always present in the younger paruterine bodies of *Rh. cylindrica* †.

It seems therefore to be clear that the Cestode which forms the subject of these remarks would be undoubtedly referred to the genus *Rhabdometra*, were there no knowledge

* See text-fig. 5, p. 868, of my memoir just cited.

† I take this opportunity of adding a new fact of some little interest to what is known of the anatomy of *Rhabdometra cylindrica*. I found in the case of one proglottid only, out of a number which I examined, a duct leading from the anterior region of the uterus, which was followed to its opening on the ventral surface of the segment by an involution of the subcuticular layer as near as possible in the middle of the ventral surface. It will be observed that the occasional existence in the present species of a separate uterine pore is more striking as a retention of an archaic state of affairs than in *Dasyurotænia*, where (see Beddard, P.Z.S. 1915, p. 190, text-fig. 8) the occasional uterine pore is lateral and involves the lateral water vascular tube. It is clear that in the genus *Rhabdometra* a comparison is undoubtedly to be made with the Pseudophyllidea and the Ichthyotæniids, and not with the dorsal and ventral pores, connected though they are with the egg-holding system, of *Amabilia* and (?) *Schistotænia*.

of its peculiar tentacles. It is, of course, quite possible that such have been overlooked, especially in view of the fact that so few of the Cestodes known to science have been examined in a living condition. Their extreme retractility, amounting almost to disappearance, would render it most easy to miss them in sections through the scolex. I have myself been unable to discover them in sections of *Rhabdometra cylindrica*. If this lack of tentacles is only apparent and due to the difficulty of seeing them, it may be that this worm is identical with *Rhabdometra numida*, a species described by Fuhrmann from the Guinea-fowl *N. ptilorhyncha**. While therefore I believe myself to be correct in describing the worm as a "new tentaculate Cestode," it may not be a new Cestode. But further investigation is required before it can be asserted that the existence of retractile tentacles is characteristic of the genus *Rhabdometra*, and, for the matter of that, of other genera.

PROCEEDINGS OF LEARNED SOCIETIES.

GEOLOGICAL SOCIETY.

November 19th, 1919.—Mr. G. W. Lamplugh, F.R.S., President, in the Chair.

The following communication was read:—

'The Pleistocene Deposits around Cambridge.' By Prof. John Edward Marr, Sc.D., F.R.S., V.P.G.S.

This paper deals with the deposits in the immediate vicinity of Cambridge, and contains new records of sections, fossils, and implements. It is pointed out that, owing to alternating periods of erosion and aggradation, relative height above sea-level is not a trustworthy index of antiquity, and modifications of the classification proposed by W. Penning and A. J. Jukes-Browne are indicated.

The Author suggests the following chronological sequence, in descending order:—

	Feet.
(1) Barnwell Station Beds	20
(2) Newer Downing Site Beds	35
(3) Newer Barnwell Village Beds	45
(4) Huntingdon Road Clays	70
(5) Observatory Beds	85
(6) *Corbicula* Gravels (Barnwell village, etc.)	30

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* Swedish Zool. Exp. Egypt, pt. iii. 1909, p. 36.